Gulf Coast ACCUTEST LABORATORIES

08/03/12

Technical Report for

Shaw Environmental, Inc.

No. 142830, USEPA NRMRL, Ada-OK

Accutest Job Number: TC11153

Sampling Date: 06/18/12

Report to:

beall.charles@epa.gov

Total number of pages in report: 33

ACCREDITED IN ACCORDANCE WITH nelac

Paul K Canevaro

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-12-7) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (211-035)

Test results relate only to samples analyzed.

Sections:

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Sample Summary

Shaw Environmental, Inc.

Job No: TC11153

No. 142830, USEPA NRMRL, Ada-OK

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
TC11153-1	06/18/12	00:00		06/21/12	SO	Soil	PAVSED01
TC11153-1A	06/18/12	00:00		06/21/12	SO	Soil	PAVSED01
TC11153-2	06/18/12	00:00		06/21/12	SO	Soil	PAVSED02
TC11153-2A	06/18/12	00:00		06/21/12	SO	Soil	PAVSED02

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Shaw Environmental, Inc. **Job No** TC11153

Site: No. 142830, USEPA NRMRL, Ada-OK **Report Date** 7/6/2012 3:35:34 PM

2 Samples were collected on 06/18/2012 and were received intact at Accutest on 06/21/2012 and properly preserved in 1 cooler at 24.7 Deg C These Samples received an Accutest job number of TC11153. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010B

Matrix SO **Batch ID:** MP18022

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC11237-1MS, TC11237-1MSD, TC11237-1SDL were used as the QC samples for metals.
- Matrix Spike Recovery(s) for Antimony, Arsenic, Chromium, Selenium are outside control limits. Spike recovery indicates possible matrix interference.
- Matrix Spike Duplicate Recovery(s) for Antimony, Arsenic, Copper, Selenium, Chromium are outside control limits. High RPD due to possible sample nonhomogeneity or matrix interference.
- Matrix Spike Duplicate Recovery(s) for Aluminum, Titanium are outside control limits. High RPD due to possible sample nonhomogeneity or matrix interference.
- Matrix Spike Recovery(s) for Aluminum, Titanium are outside control limits. Probable cause due to background sample concentration is greater than 4 times the spike amount.
- Matrix Spike Recovery(s) for Aluminum, Titanium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- RPD(s) for MSD for Chromium, Titanium are outside control limits for sample MP18022-S2. High RPD due to possible sample nonhomogeneity or matrix interference.
- RPD(s) for Serial Dilution for Arsenic, Cadmium are outside control limits for sample MP18022-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- TC11153-1 for Lead: Elevated reporting limit due to matrix interference.
- TC11153-2 for Cadmium: Elevated reporting limit due to matrix interference.
- TC11153-2 for Arsenic: Elevated reporting limit due to matrix interference.
- TC11153-2 for Aluminum: Elevated reporting limit due to matrix interference.
- TC11153-1 for Selenium: Elevated reporting limit due to matrix interference.
- TC11153-1 for Nickel: Elevated reporting limit due to matrix interference.
- TC11153-1 for Titanium: Elevated reporting limit due to matrix interference.
- TC11153-1 for Copper: Elevated reporting limit due to matrix interference.
- TC11153-1 for Chromium: Elevated reporting limit due to matrix interference.
- TC11153-1 for Cadmium: Elevated reporting limit due to matrix interference.
- TC11153-2 for Copper: Elevated reporting limit due to matrix interference.
- TC11153-1 for Aluminum: Elevated reporting limit due to matrix interference.
- TC11153-2 for Titanium: Elevated reporting limit due to matrix interference.
- TC11153-1 for Arsenic: Elevated reporting limit due to matrix interference.
- TC11153-2 for Lead: Elevated reporting limit due to matrix interference.

Metals By Method SW846 6010B

Matrix	SO	Batch ID:	MP18022

- TC11153-2 for Nickel: Elevated reporting limit due to matrix interference.
- TC11153-2 for Selenium: Elevated reporting limit due to matrix interference.
- TC11153-2 for Chromium: Elevated reporting limit due to matrix interference.
- TC11153-1 for Antimony: Elevated reporting limit due to matrix interference.
- TC11153-2 for Antimony: Elevated reporting limit due to matrix interference.

Metals By Method SW846 6020A

Matrix	SO	Batch ID:	N:MP65280

- TC11153-2A for Selenium: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-2A for Titanium: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-2A for Nickel: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-2A for Lead: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-2A for Cadmium: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-2A for Arsenic: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-2A for Antimony: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-2A for Aluminum: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-2A for Chromium: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-1A for Cadmium: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-2A for Copper: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-1A for Titanium: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-1A for Selenium: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-1A for Nickel: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-1A for Lead: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-1A for Aluminum: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-1A for Chromium: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-1A for Arsenic: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-1A for Antimony: Analysis performed at Accutest Laboratories, Dayton, NJ.
- TC11153-1A for Copper: Analysis performed at Accutest Laboratories, Dayton, NJ.

Wet Chemistry By Method SM 2540 G

Matrix	SO	Batch ID:	GN43161

- Sample(s) TC11117-1DUP were used as the QC samples for Solids, Percent.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Accutest Laboratories Gulf Coast, Inc.	**Job No**	TC11153
Site:	SHAWOHC: No. 142830, USEPA NRMRL, Ada-OK	**Report Date**	7/3/2012 5:09:28 PM

On 06/30/2012, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 2.0 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of TC11153 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Metals By Method SW846 6020A

Matrix: SO **Batch ID:** MP65280

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC11153-1AMS, TC11153-1AMSD, TC11153-1AS DL were used as the QC samples for metals.
- Matrix Spike Recovery(s) for Chromium, Copper are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- Matrix Spike Duplicate Recovery(s) for Lead are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- RPD(s) for MS/MSD for Copper are outside control limits for sample MP65280-S2. High rpd due to possible sample nonhomogeneity.
- RPD(s) for Serial Dilution for Selenium are outside control limits for sample MP65280-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

Summary of Hits

Job Number: TC11153
Account: Shaw Environmental, Inc.
Project: No. 142830, USEPA NRMRL, Ada-OK
Collected: 06/18/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TC11153-1	PAVSED01					
Aluminum [a]		2070	60	4.4	mg/kg	SW846 6010B
Arsenic [a]		3.3	3.0	0.51	mg/kg	SW846 6010B
Cadmium [a]		2.1	1.5	0.085	mg/kg	SW846 6010B
Chromium [a]		83.0	3.0	0.14	mg/kg	SW846 6010B
Copper [a]		719	6.0	0.34	mg/kg	SW846 6010B
Lead [a]		56.3	6.0	0.60	mg/kg	SW846 6010B
Nickel [a]		64.9	24	0.69	mg/kg	SW846 6010B
Titanium [a]		53.1	6.0	0.18	mg/kg	SW846 6010B
TC11153-1A	PAVSED01					
Aluminum [b]		1950	26	0.33	mg/kg	SW846 6020A
Antimony [b]		3.4	0.26	0.017	mg/kg	SW846 6020A
Arsenic [b]		10	0.26	0.022	mg/kg	SW846 6020A
Chromium [b]		108	1.0	0.026	mg/kg	SW846 6020A
Copper [b]		168	1.0	0.059	mg/kg	SW846 6020A
Lead [b]		16.2	0.26	0.018	mg/kg	SW846 6020A
Nickel [b]		58.4	1.0	0.044	mg/kg	SW846 6020A
Titanium [b]		52.2	0.52	0.15	mg/kg	SW846 6020A
TC11153-2	PAVSED02					
Aluminum [a]		2490	60	4.4	mg/kg	SW846 6010B
Arsenic [a]		5.1	3.0	0.51	mg/kg	SW846 6010B
Cadmium [a]		2.0	1.5	0.084	mg/kg	SW846 6010B
Chromium [a]		79.9	3.0	0.14	mg/kg	SW846 6010B
Copper [a]		438	6.0	0.33	mg/kg	SW846 6010B
Lead [a]		17.6	6.0	0.60	mg/kg	SW846 6010B
Nickel [a]		62.4	24	0.69	mg/kg	SW846 6010B
Titanium [a]		57.6	6.0	0.17	mg/kg	SW846 6010B
TC11153-2A	PAVSED02					
Aluminum [b]		2720	26	0.33	mg/kg	SW846 6020A
Antimony [b]		2.5	0.26	0.017	mg/kg	SW846 6020A
Arsenic [b]		9.2	0.26	0.022	mg/kg	SW846 6020A
Chromium [b]		96.2	1.0	0.026	mg/kg	SW846 6020A
Copper [b]		470	5.2	0.30	mg/kg	SW846 6020A
Lead [b]		7.6	0.26	0.018	mg/kg	SW846 6020A
Nickel [b]		49.4	1.0	0.044	mg/kg	SW846 6020A
Titanium [b]		80.5	0.52	0.15	mg/kg	SW846 6020A

(a) Elevated reporting limit due to matrix interference.

Summary of Hits

Job Number: TC11153
Account: Shaw Environmental, Inc.
Project: No. 142830, USEPA NRMRL, Ada-OK
Collected: 06/18/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

(b) Analysis performed at Accutest Laboratories, Dayton, NJ.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PAVSED01		
Lab Sample ID:	TC11153-1	**Date Sampled:**	06/18/12
Matrix:	SO - Soil	**Date Received:**	06/21/12
		Percent Solids:	98.8
Project:	No. 142830, USEPA NRMRL, Ada-OK		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum [a]	2070	60	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Antimony [a]	<30	30	mg/kg	50	06/27/12	06/28/12	EG	SW846 6010B [2]	SW846 3050B [3]
Arsenic [a]	3.3	3.0	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Cadmium [a]	2.1	1.5	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Chromium [a]	83.0	3.0	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Copper [a]	719	6.0	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Lead [a]	56.3	6.0	mg/kg	10	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Nickel [a]	64.9	24	mg/kg	10	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Selenium [a]	<12	12	mg/kg	20	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Titanium [a]	53.1	6.0	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA7017
(2) Instrument QC Batch: MA7023
(3) Prep QC Batch: MP18022

(a) Elevated reporting limit due to matrix interference.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PAVSED01		
Lab Sample ID:	TC11153-1A	**Date Sampled:**	06/18/12
Matrix:	SO - Soil	**Date Received:**	06/21/12
		Percent Solids:	98.8
Project:	No. 142830, USEPA NRMRL, Ada-OK		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum [a]	1950	26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [2]
Antimony [a]	3.4	0.26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [2]
Arsenic [a]	10	0.26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [2]
Cadmium [a]	<0.26	0.26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [2]
Chromium [a]	108	1.0	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [2]
Copper [a]	168	1.0	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [2]
Lead [a]	16.2	0.26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [2]
Nickel [a]	58.4	1.0	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [2]
Selenium [a]	<0.26	0.26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [2]
Titanium [a]	52.2	0.52	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [2]

(1) Instrument QC Batch: N:MA28909
(2) Prep QC Batch: N:MP65280

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PAVSED02		
Lab Sample ID:	TC11153-2	**Date Sampled:**	06/18/12
Matrix:	SO - Soil	**Date Received:**	06/21/12
		Percent Solids:	98.5
Project:	No. 142830, USEPA NRMRL, Ada-OK		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum [a]	2490	60	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Antimony [a]	<30	30	mg/kg	50	06/27/12	06/28/12	EG	SW846 6010B [2]	SW846 3050B [3]
Arsenic [a]	5.1	3.0	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Cadmium [a]	2.0	1.5	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Chromium [a]	79.9	3.0	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Copper [a]	438	6.0	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Lead [a]	17.6	6.0	mg/kg	10	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Nickel [a]	62.4	24	mg/kg	10	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Selenium [a]	<12	12	mg/kg	20	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]
Titanium [a]	57.6	6.0	mg/kg	5	06/27/12	06/28/12	EG	SW846 6010B [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA7017
(2) Instrument QC Batch: MA7023
(3) Prep QC Batch: MP18022

(a) Elevated reporting limit due to matrix interference.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PAVSED02		
Lab Sample ID:	TC11153-2A	**Date Sampled:**	06/18/12
Matrix:	SO - Soil	**Date Received:**	06/21/12
		Percent Solids:	98.5
Project:	No. 142830, USEPA NRMRL, Ada-OK		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum [a]	2720	26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [3]
Antimony [a]	2.5	0.26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [3]
Arsenic [a]	9.2	0.26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [3]
Cadmium [a]	<0.26	0.26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [3]
Chromium [a]	96.2	1.0	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [3]
Copper [a]	470	5.2	mg/kg	25	06/30/12	07/03/12	ANJ	SW846 6020A [2]	SW846 3050B [3]
Lead [a]	7.6	0.26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [3]
Nickel [a]	49.4	1.0	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [3]
Selenium [a]	<0.26	0.26	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [3]
Titanium [a]	80.5	0.52	mg/kg	5	06/30/12	07/02/12	ANJ	SW846 6020A [1]	SW846 3050B [3]

(1) Instrument QC Batch: N:MA28909
(2) Instrument QC Batch: N:MA28912
(3) Prep QC Batch: N:MP65280

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

RL = Reporting Limit

Gulf Coast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

TC11153

USEPA, ORD, NRMRL

Sample Analysis Request and Chain of Custody (COC) Record

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Project: 8ME818SF
Location: Ada, OK 74820
Project Manager/Phone: Charles Beall (512)826-8182
Lab Name: Accutest Laboratories
Address: 10165 Harwin Dr. Houston, TX 77036
Contact Name/Phone: Dr. Canvarder Dr. Doss (713)271-4700
Shipping Method: UPS
Shipping Date: 6/21/12
Shipping Tracking Number:
Total Number of Shipping Containers: 1

	Sample Number	Sample Matrix/Description	Date/Time Collected	Container Type	Preservation	Number of Containers	Requested Parameters: ICP-MS* 6020	Requested Parameters: ICP-Scr 6010					Special Instructions
1	PAVSED01	soil/Sed.	6/18/12	Plastic tub	NA	1	X	X					Run in duplicate!
2	PAVSED02	soil/Sed.	6/18/12	Plastic tub	NA	1	X	X					Run in duplicate!

☆ Return samples to: Charles Beall
USEPA GWERD
919 Kerr Research Dr
Ada, OK 74820

*Cu, Cd, Cr, Pb, As, Sb, Se, Ti, Ni, Al

Relinquished By: Printed name: Charles Beall Signature: Charles E Beall Affiliation: Shaw E+I Date: 6/20/12 Time: 3:00pm
Received By: Printed name: ________ Signature: ________ Affiliation: ________ Date: ________ Time: ________
Comments:

Relinquished By: Printed name: ________ Signature: ________ Affiliation: ________ Date: ________ Time: ________
Received By: Printed name: Carrie Hurtado Signature: Carrie Hurtado Affiliation: Accutest Date: 6/21/12 Time: 10:00
Comments:

Pink copy - Field Custodian, Yellow copy - Lab Custodian, White copy - Project Manager EPA-442 (CIN) (09/08)

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TC11153: Chain of Custody
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ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC11153 **Client:** USEPA **Project:** 8ME818SF

Date / Time Received: 6/21/2012 **Delivery Method:** **Airbill #'s:** 1ZV7F6690193218501

No. Coolers: 1 **Therm ID:** IRGUN5; **Temp Adjustment Factor:** -0.4;

Cooler Temps (Initial/Adjusted): #1: (25.1/24.7);

Cooler Security	Y or N		Y or N
1. Custody Seals Present:	☑ ☐	3. COC Present:	☑ ☐
2. Custody Seals Intact:	☑ ☐	4. Smpl Dates/Time OK	☐ ☑

Cooler Temperature	Y or N
1. Temp criteria achieved:	☐ ☑
2. Cooler temp verification:	IR Gun
3. Cooler media:	No Ice

Quality Control Preservation	Y or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐ ☐	☑	☐	☐
2. Trip Blank listed on COC:	☐ ☐	☑		
3. Samples preserved properly:	☑ ☐			
4. VOCs headspace free:	☐ ☐	☑		

Sample Integrity - Documentation	Y or N
1. Sample labels present on bottles:	☑ ☐
2. Container labeling complete:	☐ ☑
3. Sample container label / COC agree:	☑ ☐

Sample Integrity - Condition	Y or N
1. Sample recvd within HT:	☑ ☐
2. All containers accounted for:	☑ ☐
3. Condition of sample:	Intact

Sample Integrity - Instructions	Y or N	N/A
1. Analysis requested is clear:	☑ ☐	
2. Bottles received for unspecified tests	☐ ☑	
3. Sufficient volume recvd for analysis:	☑ ☐	
4. Compositing instructions clear:	☐ ☐	☑
5. Filtering instructions clear:	☐ ☐	☑

Comments RECEIVED SAMPLES AT ROOM TEMP.

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TC11153: Chain of Custody
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ACCUTEST LABORATORIES

Problem Resolution

Accutest Job Number: TC11153

CSR: Sylvia Garza **Response Date:** 6/25/2012

Response: Metals Soils without Hg is okay being at 25.1 C

TC11153: Chain of Custody
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ACCUTEST LABORATORIES

Sample Receipt Log

Job #: TC11153 **Date / Time Received:** 6/21/2012 4:00:00 PM **Initials:** CH

Client: USEPA

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC11153-1	60ml	1	2-102	N/P	Note #2 - Preservative check not applicable.	IRGUN5	25.1	-0.4	24.7
1	TC11153-2	60ml	1	2-102	N/P	Note #2 - Preservative check not applicable.	IRGUN5	25.1	-0.4	24.7

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TC11153: Chain of Custody
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Gulf Coast ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TC11153
Account: SHAWOHC - Shaw Environmental, Inc.
Project: No. 142830, USEPA NRMRL, Ada-OK

QC Batch ID: MP18022 Methods: SW846 6010B
Matrix Type: SOLID Units: mg/kg

Prep Date: 06/27/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.41	.73	-0.032	<10
Antimony	0.50	.05	.085	-0.015	<0.50
Arsenic	0.50	.085	.085	-0.061	<0.50
Barium	10	.049	.069		
Beryllium	0.20	.0028	.0055		
Boron	5.0	.07	.17		
Cadmium	0.25	.0055	.014	0.0040	<0.25
Calcium	250	.37	1.3		
Chromium	0.50	.012	.023	0.015	<0.50
Cobalt	2.5	.0075	.03		
Copper	1.0	.056	.056	-0.0010	<1.0
Iron	5.0	.057	1.1		
Lead	0.50	.05	.05	0.063	<0.50
Lithium	15	.1			
Magnesium	250	.38	1.3		
Manganese	0.75	.0027	.037		
Molybdenum	0.50	.02	.025		
Nickel	2.0	.035	.057	-0.0065	<2.0
Potassium	250	2	10		
Selenium	0.50	.077	.14	-0.022	<0.50
Silver	0.50	.058	.058		
Sodium	250	.46	1.6		
Strontium	1.0	.0031	.059		
Thallium	0.50	.034	.04		
Tin	1.0	.035	.035		
Titanium	1.0	.015	.029	0.010	<1.0
Vanadium	2.5	.015	.034		
Zinc	1.0	.026	.084		

Associated samples MP18022: TC11153-1, TC11153-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TC11153
Account: SHAWOHC - Shaw Environmental, Inc.
Project: No. 142830, USEPA NRMRL, Ada-OK

QC Batch ID: MP18022
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 06/27/12

Metal	TC11237-1 Original	MS	Spikelot MPTW4	% Rec	QC Limits
Aluminum	14900	16500	2990	0.0 (a)	75-125
Antimony	0.0	5.7	23.9	23.9N(b)	75-125
Arsenic	0.66	13.0	23.9	51.8N(b)	75-125
Barium	anr				
Beryllium	anr				
Boron					
Cadmium	0.22	19.9	23.9	82.2	75-125
Calcium	anr				
Chromium	13.6	31.5	23.9	63.2N(b)	75-125
Cobalt					
Copper	16.1	36.3	23.9	77.0	75-125
Iron	anr				
Lead	3.8	28.6	23.9	100.9	75-125
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum					
Nickel	14.4	37.6	23.9	103.4	75-125
Potassium					
Selenium	0.0	14.1	23.9	59.0N(b)	75-125
Silver	anr				
Sodium	anr				
Strontium					
Thallium					
Tin					
Titanium	999	997	23.9	-766.1(a	75-125
Vanadium					
Zinc	anr				

Associated samples MP18022: TC11153-1, TC11153-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TC11153
Account: SHAWOHC - Shaw Environmental, Inc.
Project: No. 142830, USEPA NRMRL, Ada-OK

QC Batch ID: MP18022
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 06/27/12

Metal	TC11237-1 Original	MSD	Spikelot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum	14900	15800	2980	-23.5(a)	17.9	20
Antimony	0.0	6.1	23.8	25.6N(b)	4.8	20
Arsenic	0.66	12.9	23.8	51.5N(b)	17.0	20
Barium	anr					
Beryllium	anr					
Boron						
Cadmium	0.22	19.7	23.8	81.6	13.7	20
Calcium	anr					
Chromium	13.6	31.1	23.8	61.7N(b)	22.5 (c)	20
Cobalt						
Copper	16.1	35.3	23.8	73.0N(b)	15.2	20
Iron	anr					
Lead	3.8	28.0	23.8	98.6	0.7	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	14.4	36.3	23.8	98.2	2.8	20
Potassium						
Selenium	0.0	14.1	23.8	59.2N(b)	18.6	20
Silver	anr					
Sodium	anr					
Strontium						
Thallium						
Tin						
Titanium	999	959	23.8	-927.1(a	23.1 (c)	20
Vanadium						
Zinc	anr					

Associated samples MP18022: TC11153-1, TC11153-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(b) Spike recovery indicates possible matrix interference.
(c) High RPD due to possible sample nonhomogeneity or matrix interference.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TC11153
Account: SHAWOHC - Shaw Environmental, Inc.
Project: No. 142830, USEPA NRMRL, Ada-OK

QC Batch ID: MP18022
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 06/27/12

Metal	LCS Result	Spikelot MPLCD057	% Rec	QC Limits
Aluminum	10500	8400	125.0	47-152
Antimony	93.3	93.3	100.0	54-199
Arsenic	84.2	94.5	89.1	82-117
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	55.4	60.5	91.6	83-117
Calcium	anr			
Chromium	70.9	70.4	100.7	82-118
Cobalt				
Copper	77.1	79.6	96.9	84-116
Iron	anr			
Lead	94.7	91.8	103.2	82-118
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	61.4	57.6	106.6	83-117
Potassium				
Selenium	78.3	86.4	90.6	80-120
Silver	anr			
Sodium	anr			
Strontium				
Thallium				
Tin				
Titanium	281	188	149.5	19-181
Vanadium				
Zinc	anr			

Associated samples MP18022: TC11153-1, TC11153-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TC11153
Account: SHAWOHC - Shaw Environmental, Inc.
Project: No. 142830, USEPA NRMRL, Ada-OK

QC Batch ID: MP18022
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/27/12

Metal	TC11237-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	250000	275000	0.5	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	11.0	13.3	26.5 (a)	0-10
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	3.68	3.41	21.6 (a)	0-10
Calcium	anr			
Chromium	229	277	0.5	0-10
Cobalt				
Copper	270	298	0.6	0-10
Iron	anr			
Lead	63.4	71.2	4.7	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	241	215	0.8	0-10
Potassium				
Selenium	0.00	0.00	NC	0-10
Silver	anr			
Sodium	anr			
Strontium				
Thallium				
Tin				
Titanium	16700	19600	0.4	0-10
Vanadium				
Zinc	anr			

Associated samples MP18022: TC11153-1, TC11153-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Gulf Coast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody

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SUBCONTRACT COC

RUSH

Page 1 of 1

10165 Harwin, Suite 150 - Houston, TX 77036 - 713-271-4700 fax: 713-271-4770

FED-EX Tracking # 5355 9923 7695 | Bottle Order Control #

Accutest Quote # | Accutest Job # J810264 (SC) 6/30/12

Client Information	Subcontract Information	Requested Analyses	Matrix Codes
Company Name: Accutest Gulf Coast	Subcontract Laboratory: ACCUTEST NEW JERSEY		DW - Drinking Water
Project Contact: Sylvia Garza — Email	Laboratory Contact: Sample Receiving — Email		GW - Ground Water
Address: 10165 Harwin Dr, Suite 150	Address		WW - Wastewater
City: Houston — State: TX — Zip: 77036	City — State — Zip		SW - Surface Water
Phone No.: 713-271-4700	Phone No.		SO - Soil
			SL - Sludge
			OI - Oil
			LIQ - Liquid
			SOL - Other Solid

Accutest Sample Number	Collection Date	Time	Matrix	# of bottles	Number of preserved bottles: HCl	HOAc	HNO3	H2SO4	NaOH/ZnAc	TSP	NONE	OTHER	ALMS, ASMS, CDMS, CRMS, CUMS, NIMS, PBMS, SBMS, SEMS, TIMS (6020)	LAB USE ONLY
TC11153-1A	6/18/2012		SO	1									X	
TC11153-2A	6/18/2012		SO	1									X	ME 31

Turnaround Time (Business days)

- [ ] STANDARD — Approved By:/ Date:
- [ ] 7 Day
- [ ] 4 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*
- [ ] Other

RUSH RUSH ** RUSH **

Real time analytical data available via Lablink

Data Deliverable Information

- [ ] Commercial "A"
- [ ] Commercial "B"
- [ ] Reduced Tier 1
- [X] Full Data Package
- [ ] TRRP-13
- [ ] EDD Format_____
- [ ] Other_____ COMMBN+

RUSH

Commercial "A" = Results Only
Commercial "B" = Results & Standard QC

Comments / Remarks

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

Relinquished by Sampler: 1	Date Time: 6-29-12 1510	Received By: 1 FX	Relinquished By: 2 FEDEX	Date Time: 6/30/12 1000	Received By: 2		
Relinquished by: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4		
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # CLIENT SEAL INTACT	Preserved where applicable ☐	On Ice ☒	Cooler Temp. 2.0 °C	

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TC11153: Chain of Custody
Page 1 of 2
Accutest New Jersey

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC11153 **Client:** **Project:**

Date / Time Received: 6/30/2012 **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (2/2); 0

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	Bar Therm		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control_Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

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TC11153: Chain of Custody
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EPAPAV0031755

Gulf Coast ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TC11153
Account: ALGC - Accutest Laboratories Gulf Coast, Inc.
Project: SHAWOHC: No. 142830, USEPA NRMRL, Ada-OK

QC Batch ID: MP65280
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date:

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.9	.31	1.6	<25
Antimony	0.25	.059	.016	0.022	<0.25
Arsenic	0.25	.02	.021	0.0022	<0.25
Barium	0.50	.032	.028		
Beryllium	0.25	.007	.018		
Boron	2.5	.88	.14		
Cadmium	0.25	.006	.012	-0.0011	<0.25
Calcium	130	2.1	9.5		
Chromium	1.0	.029	.025	0.014	<1.0
Cobalt	0.25	.008	.018		
Copper	1.0	.037	.057	0.039	<1.0
Iron	25	1.1	1.3		
Lead	0.25	.006	.017	0.0096	<0.25
Magnesium	130	.94	.19		
Manganese	0.50	.033	.019		
Molybdenum	0.50	.031	.012		
Nickel	1.0	.025	.043	0.0073	<1.0
Potassium	130	1.8	2.2		
Selenium	0.25	.019	.04	0.0090	<0.25
Silver	0.25	.005	.0095		
Sodium	130	6.6	1.7		
Strontium	2.5	.028	.017		
Thallium	0.25	.023	.012		
Tin	2.5	.27	.45		
Titanium	0.50	.032	.15	0.020	<0.50
Vanadium	1.0	.012	.041		
Zinc	2.0	.16	.13		

Associated samples MP65280: TC11153-1A, TC11153-2A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TC11153
Account: ALGC - Accutest Laboratories Gulf Coast, Inc.
Project: SHAWOHC: No. 142830, USEPA NRMRL, Ada-OK

QC Batch ID: MP65280 Methods: SW846 6020A
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal	TC11153-1A Original	MS	Spikelot MPIOS5	% Rec	QC Limits
Aluminum	1950	8640	5360	124.9	75-125
Antimony	3.4	80.9	99.2	78.1	75-125
Arsenic	10	432	397	106.3	75-125
Barium					
Beryllium					
Boron					
Cadmium	0.044	10.2	9.92	102.3	75-125
Calcium					
Chromium	108	175	39.7	168.8N(a	75-125
Cobalt					
Copper	168	1020	49.6	1717.2Na	75-125
Iron					
Lead	16.2	125	99.2	109.6	75-125
Magnesium					
Manganese					
Molybdenum					
Nickel	58.4	168	99.2	110.5	75-125
Potassium					
Selenium	0.11	410	397	103.3	75-125
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium	52.2	172	99.2	120.7	75-125
Vanadium					
Zinc					

Associated samples MP65280: TC11153-1A, TC11153-2A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TC11153
Account: ALGC - Accutest Laboratories Gulf Coast, Inc.
Project: SHAWOHC: No. 142830, USEPA NRMRL, Ada-OK

QC Batch ID: MP65280 Methods: SW846 6020A
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal	TC11153-1A Original	MSD	Spikelot MPIOS5	% Rec	MSD RPD	QC Limit
Aluminum	1950	7890	5310	111.9	9.1	20
Antimony	3.4	83.0	98.3	81.0	2.6	20
Arsenic	10	412	393	102.3	4.7	20
Barium						
Beryllium						
Boron						
Cadmium	0.044	10	9.83	101.3	2.0	20
Calcium						
Chromium	108	155	39.3	119.6	12.1	20
Cobalt						
Copper	168	754	49.1	1192.7Na	30.0 (b)	20
Iron						
Lead	16.2	140	98.3	126.0N(a	11.3	20
Magnesium						
Manganese						
Molybdenum						
Nickel	58.4	159	98.3	102.4	5.5	20
Potassium						
Selenium	0.11	387	393	98.4	5.8	20
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium	52.2	162	98.3	111.7	6.0	20
Vanadium						
Zinc						

Associated samples MP65280: TC11153-1A, TC11153-2A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
(b) High rpd due to possible sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TC11153
Account: ALGC - Accutest Laboratories Gulf Coast, Inc.
Project: SHAWOHC: No. 142830, USEPA NRMRL, Ada-OK

QC Batch ID: MP65280 Methods: SW846 6020A
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal	BSP Result	Spikelot MPIOS5	% Rec	QC Limits
Aluminum	5820	5400	107.8	80-120
Antimony	110	100	110.0	80-120
Arsenic	453	400	113.3	80-120
Barium				
Beryllium				
Boron				
Cadmium	11.0	10	110.0	80-120
Calcium				
Chromium	43.0	40	107.5	80-120
Cobalt				
Copper	53.0	50	106.0	80-120
Iron				
Lead	109	100	109.0	80-120
Magnesium				
Manganese				
Molybdenum				
Nickel	107	100	107.0	80-120
Potassium				
Selenium	457	400	114.3	80-120
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium	104	100	104.0	80-120
Vanadium				
Zinc				

Associated samples MP65280: TC11153-1A, TC11153-2A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TC11153
Account: ALGC - Accutest Laboratories Gulf Coast, Inc.
Project: SHAWOHC: No. 142830, USEPA NRMRL, Ada-OK

QC Batch ID: MP65280 Methods: SW846 6020A
Matrix Type: SOLID Units: ug/l

Prep Date:

Metal	TC11153-1A Original	SDL 5:25	%DIF	QC Limits
Aluminum	18700	19300	3.3	0-10
Antimony	32.4	35.1	8.5	0-10
Arsenic	95.6	103	7.8	0-10
Barium				
Beryllium				
Boron				
Cadmium	0.421	0.448	6.3	0-10
Calcium				
Chromium	1040	1030	0.8	0-10
Cobalt				
Copper	1610	1660	3.6	0-10
Iron				
Lead	155	153	1.4	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel	560	579	3.4	0-10
Potassium				
Selenium	0.00	0.00	NC (a)	0-10
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium	500	474	5.2	0-10
Vanadium				
Zinc				

Associated samples MP65280: TC11153-1A, TC11153-2A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).